Vocal Emergencies

Adam M. Klein, MD, Michael M. Johns III, MD*

Emory University School of Medicine, The Emory Voice Center, 550 Peachtree Street, 9th Floor, Suite 4400, Atlanta, GA 30308, USA

“The laryngologist should unquestionably have a thorough understanding of the various vocal disorders which he is in a position to observe in singers, orators, and what one might call professional voice-users. He should also know the therapeutic methods suitable to apply them. We are far beyond the time when hoarseness and other manifestations observed in this category of professional voice-users were attributed to “granular” pharyngitis or laryngitis.”

E.J. Moure, 1929 [1]

The evaluation and management of voice disorders has evolved into a specialized, multidisciplinary, and highly technological practice since the early part of the twentieth century. Nonetheless, a good portion of voice care delivery for professional voice users is performed by general otolaryngologists who do not have an experienced speech pathologist or videostroboscopic equipment available. Even in this modern era, many situations arise where vocal performers are being assessed by dim light reflected off a dental mirror, often outside the office setting—the means by which Czermak performed indirect laryngoscopy in 1860 [2]. Fortunately, the improved quality, portability, and better affordability of endoscopic technology has allowed for better visual assessment of the larynx in the office and the field. In addition, an increased focus on vocal awareness and education in modern otolaryngology training programs has begun to close the experience gap between general otolaryngologists and laryngology subspecialists.

Ultimately, the optimal care of a professional voice user with a vocal emergency occurs within a setting where a full clinical voice evaluation and laryngeal examination, including videostroboscopy, can be performed. This article is designed to be a reference guide for the treatment of vocal performers in the acute scenario, with the hopes of facilitating optimal treatment for these vocal athletes in any setting.

* Corresponding author.
E-mail address: michael.m.johns@emoryhealthcare.org (M.M. Johns).
Essentials of the history

“Unquestionably the greatest of all causes of laryngeal disease is the excessive use of one of its normal functions, phonation. This is not surprising in view of the fact that phonation was not the primary function of the larynx; phylogenetically it is very late. The patient with chronic laryngeal disease is almost always a person who either talks constantly or uses his voice professionally, or often, both. There is little use asking the patient if he talks much. For some curious reason a patient who talks all the time he is awake will insist he talks little. It is not only the singer, the lecturer, and the huckster who suffer from occupational abuse of the larynx. Teachers are especially frequent sufferers and persons who talk in noisy places such as factories where machinery is running often develop chronic hoarseness. The noise incidental to our modern life is a large factor in the great and increasing incidence of hoarseness and laryngeal disease.”

Chevalier L. Jackson, 1942 [3]

A recent review of performers with acute illness before performance found that nearly 75% of complaints center around vocal difficulty, with sinus complaints, pharyngeal irritation, and cough being the next most common primary symptoms [4]. As with any chief complaint, a thorough history is imperative when managing a vocal emergency. Detailed questionnaires have been published previously [5]. Unfortunately, patients typically are vague and occasionally may withhold information when describing their vocal problems [4]. The term “hoarseness” is nonspecific, and the exact symptoms need to be elucidated further with the patient. Challenging the patient to describe one’s voice problem without using general terms, such as “hoarseness” or “laryngitis,” is one way of extracting more information. Asking “What is your voice doing that it should not do?” and “What is your voice not doing that it should do?” are two useful questions to prompt the patient further.

Patients should be questioned regarding the details surrounding the onset of the vocal disorder. Any vocal change with a sudden onset (particularly an acute change that occurs during phonation) is a red flag for a vocal fold hemorrhage or mucosal tear. This finding must be investigated further with laryngeal imaging. Ask specific questions about loss of range or loss of vocal control. Loss of high range during soft singing is a sensitive indicator of vocal fold swelling. Increased effort in singing and delay in vocal onset are other manifestations of vocal fold mucosal edema or lesions. Changes in vocal quality, effort, endurance, and fatigue; the ability to sing or speak loudly or softly at various frequencies; or limitations in dynamic range often give clues that vocal fold pathology is present or developing. The symptoms of throat clearing, rhinorrhea, or coughing may represent associated conditions requiring medical attention, such as laryngopharyngeal reflux (LPR), allergic rhinitis, acute or chronic rhinosinusitis, or an acute upper respiratory tract infection.

The physician should gather information regarding the patient’s level of training and vocal awareness. Details of vocal warm-up routines, length and
frequency of performances, and vocal obligations between events should be noted. This information will help the clinician to understand the degree of vocal demand and what can and cannot be modified to minimize phonotrauma.

Once the parameters of the chief complaint have been established, it is important for the physician to understand the performance environment and schedule. Not infrequently, these patients are seen on site, allowing for a first-hand assessment of the performance venue. Evaluation of the acoustics, the amplification system, competing sound sources, temperature, cleanliness, air filtration system, and allergen exposures aid in understanding the patient’s relative risk for exacerbating a voice disorder. Often, simple discussion with the stage manager/director/sound technician yields a solution for short- and long-term issues. The primary goal is to minimize laryngeal irritants and maximize the acoustic environment (eg, quality vocal monitors) for the performer.

The event schedule and importance of upcoming events should be closely reviewed with the patient and their manager, if available. There are significant differences in management options if the patient is being evaluated during intermission, hours before a show, or days before a show. How upcoming events relate to the patient’s short, medium and long-term career goals is a vital perspective to gain for the purposes of making management decisions. The financial implications of missing an event or events should also be taken into consideration.

Differential diagnosis of vocal emergencies in the performing artist

A wide variety of pathology can lead to acute dysphonia in performers and result in vocal emergency [6]. Box 1 lists the most common presenting diagnoses.

Vocal fold hemorrhage

Vocal fold hemorrhages are the result of acute phonotrauma and can be considered a “vocal accident” (Fig. 1). The shearing forces within the superficial lamina propria layer tear the microvasculature, allowing blood to spread within Reinke’s space. The amount of blood and extent of spread depend on the size of the vessel, the fluid pressure within the vessel, and the contents of Reinke’s space (eg, scar tissue may prevent spread of extravasating blood). Patients commonly note sudden voice change that occurred while performing a strenuous vocal task. Anticoagulation (eg, aspirin, non-steroidal anti-inflammatory drugs [NSAIDs], warfarin sodium) and hormonal changes (eg, perimenstrual) put singers at risk for the development of a hemorrhage [7]. Women should avoid the use of NSAIDs and aspirin in the premenstrual and menstrual periods. Identification of a vocal fold
hemorrhage in the acutely dysphonic performer is extremely important and is the primary reason why laryngoscopy needs to be performed during the assessment. Vocal fold hemorrhage is treated with absolute voice rest, with or without corticosteroids, until resolution has occurred (ie, resorption

**Box 1. Differential diagnosis**

Vocal fold hemorrhage  
Vocal fold mucosal tear  
Acute laryngitis  
  Viral  
  Bacterial  
  Fungal  
  Phonotraumatic edema  
Acute edema on chronic fibrovascular (subepithelial) change/preexisting lesions  
Asthma exacerbation  
Upper respiratory tract infection  
  Pharyngitis, viral/bacterial  
  Rhinosinusitis, viral/bacterial  
  Bronchitis, viral/bacterial  
Allergic rhinitis  
LPR exacerbation  
Hormonal/endocrine changes

Fig. 1. Acute vocal fold hemorrhage. Note diffuse distribution of blood within the superficial lamina propria (Reinke’s space) of the left true vocal fold.
or migration of blood away from the vibratory margin). This usually includes cancellation of scheduled performances; thus, the otolaryngologist must be prepared to support the patient in interactions with management. Patients need to be advised of the serious risk for scar or lesion development if they are to perform through a vocal fold hemorrhage.

**Vocal fold mucosal tear**

Mucosal tears usually result from an episode of harmful singing, yelling, or severe coughing/retching. The overwhelming shearing forces exerted upon the epithelium and superficial lamina propria cause the tissue to literally separate (Fig. 2) [8]. The acute symptoms include immediate hoarseness, loss of range, and discomfort. A mucosal tear may appear as a visible break in the mucosa on stroboscopy, presenting as a jagged edge in the epithelium. Initial findings on examination also can include vocal fold hemorrhage, edema, erythema, and stiffness on videostrobolaryngoscopy. Often, a tear can be difficult to diagnose in the acute setting, and one should have a low threshold to place a patient with these symptoms on absolute voice rest with close serial evaluation. If complete voice rest is followed, healing usually occurs without sequelae. If phonation or coughing persists in the setting of a tear, the epithelium may heal to the ligament, creating a sulcus, or curl up on itself, resulting in an epithelial band. Both of these sequelae can result in an adynamic segment on the phonatory surface of the true vocal fold.

**Acute laryngitis**

As with many upper respiratory tract infections, the cause of infectious laryngitis can be viral, bacterial, or fungal. Fungal laryngitis should be
suspected in immunocompromised patients and in those on inhaled or systemic steroids. Regardless of the pathogen, the effect is essentially identical in the acute setting: Reinke’s space (the superficial lamina propria layer) engorges with inflammatory cells, resulting in increased mass (Fig. 3). This prevents the vocal fold from vibrating periodically. The addition of vocal fold mass and irregular vibration creates a lower or raspy tone. In singers, this also translates into a difficulty, or an inability, in attaining higher frequencies because the vocal folds need to oscillate more quickly at these pitches [9]. Intermittent voice breaks and changes in register transition are additional symptoms. Phonotraumatic edema has the same effect, but it is more easily treatable with conservative measures.

Relative or absolute voice rest is the mainstay of treatment, depending on the severity of the edema. Mild to moderate edema can be treated with relative voice rest and adjunctive measures noted below. Severe edema should be treated with absolute voice rest. Additionally, the patient should be advised against the use of NSAIDs, because there is an increased risk for vocal fold hemorrhage secondary to the fragility of the vocal fold blood vessels in the acutely inflamed state. Appropriate antibiotics should be prescribed if clinical suspicion for bacterial infection is present. For mild to moderate vocal fold edema, corticosteroids can be used acutely to treat edema effectively and facilitate performance. Intramuscular steroids, such as dexamethasone and cortisone, can begin to have an effect within 1 hour; oral steroids, such as prednisone and methylprednisolone, typically produce the desired effect within 1 day. Patients should be reexamined before returning to

![Fig. 3. Acute laryngitis. Note boggy edema and erythema of the true vocal folds with irregular free glottal edges. Prominent varices also can be seen.](image-url)
performance. Steroids have limited effect in cases of severe edema. In general, steroids should be used with caution, counseling patients regarding the risk for vocal fold hemorrhage, mood swings, agitation, appetite change, sleep disturbance, acid reflux exacerbation, and more serious but rare risks, such as osteopenia, precipitation or worsening of diabetes, gastric or duodenal ulcers, and avascular necrosis of the hip. Steroids should not be used in isolation without modified voice rest, defined as essential voice use only, and supportive measures. Vocal fold tear, hemorrhage, scarring, or permanent hoarseness are risks that need to be discussed with the patient when performing while taking steroids. Often, the voice sounds normal, despite the acutely fragile state of the vocal folds. The otolaryngologist also needs to be aware of performers living “shot to shot,” using steroids as a crutch for voice overuse or misuse. Taking a careful history about steroid use and effect can give clues to this problem. Vocal rehabilitation with voice therapy helps to free these patients from their chronic steroid use by instilling fundamental changes in how they use their voice and maximizing vocal efficiency.

**Acute edema on chronic fibrovascular change**

Phonotrauma in a setting of chronic fibrovascular change often results in acute edema, which results as a consequence of the increased vocal effort necessary to overcome the decreased pliability of the scarred regions. The combination of these changes results in convexities of the midmusculomembranous true vocal folds. During phonation, these areas contact prematurely—resulting in an “hourglass configuration”—and air escapes anterior and posterior to the lesions. In addition, the affected areas are stiffer than the surrounding superficial lamina propria, resulting in a differential pliability between the two vocal folds and within each true vocal fold. Diagnosis is difficult without videostroboscopy, and short-term management is similar to acute laryngitis.

**Upper respiratory tract infection**

Viral and bacterial upper respiratory tract infections can lead indirectly to acute vocal changes by way of localized edema, secretions, pain, throat clearing, coughing, dehydration, generalized malaise, nasal congestion, or headaches. A careful history of onset, location, and severity of symptoms and physical examination helps make the diagnosis and treatment and should be directed to the site of pathology. Empiric treatment with antibiotics is warranted in cases with suspected bacterial etiology. Symptomatic relief of nasal congestion can be achieved with the short-term use of topical nasal decongestants (eg, oxymetazoline). Topical nasal steroid sprays also can be helpful in the acute setting. Oral decongestants (eg, pseudoephedrine) can be extremely drying and may have secondary deleterious effects. The use of drying agents can lead to increased shearing forces, predisposing patients
to vocal fold tears, subepithelial thickening, and fibrosis. Patients should be cautioned regarding the use of topical anesthetics for pharyngitis because numbness can lead to loss of vocal control. Vigorous hydration and modified voice use is encouraged. Performance during an acute upper respiratory tract infection is discouraged.

**Allergic rhinitis**

The rhinorrhea and nasal mucosal swelling associated with allergic rhinitis can affect the vocal performer significantly, although symptoms rarely are severe enough to warrant show cancellation. Short-term relief can be achieved with oral antihistamines and nasal decongestion, although patients should be warned about the drying side effects and potential sedation seen with antihistamines. Newer antihistamines (e.g., loratadine) have less anticholinergic side effects. Long-term treatment of allergic rhinitis with appropriate therapy (e.g., nasal steroids, oral or topical antihistamines, leukotriene antagonists, mast-cell stabilizers, immunotherapy) should be recommended as indicated [10].

**Laryngopharyngeal reflux**

Performers are particularly at risk for the development of symptoms from LPR [11]. Erratic dietary habits, stress, and abdominal support associated with singing—combined with the sensitive nature of high-level vocal performance—make the vocal performer more susceptible to acute vocal change from LPR. Patients should be queried regarding typical gastroesophageal reflux disease symptoms of heartburn and regurgitation and typical LPR symptoms of throat clearing, globus, cough, and postnasal drip. The threshold for treatment with dietary, behavioral, and medical therapy (proton-pump inhibitors [PPIs] and histamine-2 receptor (H2)-blockers) should be low, and the otolaryngologist should be aware that LPR may be an exacerbant to other acute ailments, such as acute laryngitis and phononotrauma. In the acute setting, over-the-counter antacids may be of benefit. Treating reflux acutely and aggressively with twice-daily dosing of PPIs and a nighttime dose of an H2-blocker, even in asymptomatic individuals, may hasten recovery from an upper respiratory tract infection.

**Acute asthma exacerbation**

As with the general population, professional voice users are subject to medical conditions that may affect vocal quality. Asthma can diminish vocal strength, endurance, and quality by weakening the power source to the larynx. It is important to recognize this problem so that proper medical management for an acute asthma exacerbation can be instituted in a timely fashion. Inhaled steroids in conjunction with rescue inhalers are the mainstay of treatment for reactive airway disease. The clinician and the patient need to be aware of the
deleterious effects that inhaled steroids can have on vocal fold muscle bulk, the voice, and the predisposition to fungal laryngitis [12]. When possible, the patient should discuss using noninhaled or nebulized preparations to treat asthma acutely and chronically with his/her pulmonologist.

**Functional dysphonia**

Vocal performers and orators experience a significant amount of stress or anxiety, especially when nearing an event or performance. Poor vocal behaviors, including muscle tension dysphonia, can create speaking and singing difficulties that may require urgent voice therapy intervention before vocal performance. Stage fright is a behavioral problem that is addressed best with behavioral solutions. The anxiety associated with performance leads to a sympathetic “fight or flight” response. The main adverse consequence for the vocal performer is overwhelming anxiety that manifests as excessive laryngeal muscle tension and reduced breath support. The result is impaired vocal performance. Intervention consists of strategies to optimize respiration support and phonatory control, maximizing resonance, and reassurance. Hydration and good health habits are essential adjuncts. Performers should be advised to avoid turning to β-blockers and anxiolytics. These medications blunt mental and physical sharpness as well as the performance edge that results from the natural sympathetic response necessary for optimal performance. Identification of these problems and an established relationship with a trained voice/singing pathologist are essential to address this issue adequately.

**Site of the evaluation**

**Phone triage**

As one would infer from the label “vocal emergencies,” such events do command a sense of urgency. Often, the problem is not a threat to the patient’s long-term vocal health, but it is a threat to one’s imminent vocal obligation. A politician who enters a debate with a weak voice or frequent throat clearing does so at a distinct disadvantage. A lyric soprano who is unable to lilt gracefully through her upper register will earn the label of unreliable. Amidst the vocal crisis, the performing artist is rehearsing his/her lines, applying makeup, or resting to compensate for weeks of little or no sleep. For all of these reasons, voice professionals often phone the physician with the expectation that he/she will understand the predicament and provide last-minute, free advice. Not infrequently, the call comes from the patient’s manager, who attempts to convey the patient’s symptoms with limited information, making medical management difficult.

Ideally, the otolaryngologist can overcome this obstacle by seeing the patient in the office or, rarely, by driving to the venue to see the patient
personally; this is not always possible—especially if the patient has traveled out of the area—and treatment decisions may have to be made over the phone. One must go back to the history and extract any available data that may give a clue as to the likely diagnosis. Was the onset of the vocal disorder an acute event that occurred during a show? Is it part of a pattern that occurs after every show? Can the patient sing/speak at all? Is pain associated with phonation? Can the patient even warm up his/her voice? Is the patient sick?

Usually, an illness resulting in vocal difficulties is apparent. Patients complaining of hoarseness associated with the symptoms of rhinosinusitis or an acute upper respiratory tract infection will need over-the-counter or prescription medications quickly in an attempt to lessen the effect on the voice as soon as possible, followed by a reassessment. They occasionally request their “usual” remedy, such as steroids, NSAIDS, or vitamin B₁₂. The issues surrounding these medications are discussed later.

When triaging a vocal emergency over the phone, significant trust is required on the part of the physician. Voice professionals have significant pressures placed upon them to proceed with the upcoming vocal obligation, which can cloud judgment. The job of the physician is to gather enough information about the medical event, the details, the importance of the performance situation, and the patient’s “gut” feeling to provide professional guidance. The otolaryngologist should have a low threshold to request that the patient be seen either by one’s usual otolaryngologist or a colleague to ensure safety of performance. Ultimately, the decision to perform or not to perform will have to be entrusted to the patient.

**On-site evaluation**

The ideal setting for the evaluation of the acutely ill performer is in the physician’s office, where the full diagnostic armamentarium is present. This is particularly true for the patient with acute voice change in whom high-resolution laryngeal imaging and videostroboscopy are essential for accurate diagnosis. Thus, in general, otolaryngologists are advised against going to the site to evaluate the patient in lieu of an office visit. Circumstances may arise, however, when an on-site evaluation is the only option. If a patient needs to be evaluated within minutes to hours before a scheduled performance, evaluation of the patient at the venue is better than letting the patient risk performance when one should cancel.

On-site evaluation does allow the clinician to see the performance venue and its acoustic and environmental features. One also can request to see the transportation vehicle, if any, which is being used for long road trips. This may reveal potential allergens, irritants, or other factors that can contribute to voice disorders.

There are clearly significant limitations in the ability to diagnose and treat optimally in on-site settings. The main limitation is the lack of easily
portable laryngeal videostroboscopy and high-resolution laryngeal imaging equipment. Advancing technology is moderating this limitation, and one should be equipped with appropriate instruments and therapeutics (see “Tools” section) if he/she is going to be able to provide adequate on-site care.

Office evaluation

The office setting offers the best facilities to optimize patient care. This separates the patient from one’s stressful setting to allow for a more focused interview, and the otolaryngologist will have the full array of diagnostic instrumentation to make an accurate diagnosis and guide treatment. Outside of an insightful history and general otolaryngologic examination, videostroboscopy is the most clinically useful tool for the acutely dysphonic performer. Subtle vocal fold edema, lesions, glottal closure, and vocal fold mucosal pliability can be assessed clearly, and severe problems (eg, vocal fold hemorrhage) can be ruled out.

The tools you need: essential equipment to evaluate the professional voice user

On-site location

For the unusual circumstance when an on-site evaluation is the only feasible option, the “doctor’s bag” should be equipped properly for the situation. A charged otoscope and light source are essential. Nasal specula, tongue depressors, 4 x 4 gauze, various syringes and needles, topical decongestants and anesthetics, nonlatex gloves, head mirror or headlight, curved cannulas, injectable steroids and vitamin B12, ear curettes, various dental mirrors, alcohol swabs, a defogging agent, over-the-counter medications (eg, anti-inflammatories, decongestants, cough suppressant, phenylephrine, mucolytic), and antibiotic samples are the basic equipment necessary to handle most situations.

Limitations in equipment portability are being overcome by technological advances. Flexible fiberoptic laryngoscopes are readily available, as are the portable light sources that can optimize the assessment of a vocal emergency on site; however, one should be armed with other equipment because many patients will refuse the topical anesthetic (out of fear that it will affect one’s voice or swallowing) or simply will not tolerate the nasolaryngoscopy procedure. Rigid scopes also can be attached to portable light sources and are equally equipped with an eyepiece to provide direct visualization of the larynx. Historically, stroboscopy has not been an option, although portable stroboscopy units are becoming available, and handheld strobe lights are under development. The key is to have rigid or flexible endoscopy with quality illumination and, ideally, videostroboscopy to allow clear
visualization of the larynx. Without this equipment, otolaryngologists are discouraged from evaluating patients on site.

**Office location**

The optimal setting for the acute evaluation and management of a vocal crisis is the medical office. Pulling the patient out of one’s element limits distractions and preoccupations and aids in focusing on the matter at hand. Clearly, the availability of videostroboscopic equipment enables the laryngologist to improve one’s ability to accurately diagnose and, therefore, treat the ailment. Some pathologic processes are obvious enough that a dental mirror or flexible fiberoptic laryngoscope could reveal the pertinent findings; however, it does not provide useful information regarding the effects of the pathology on the laryngeal biomechanics and vocal fold oscillation. In addition, the resolution and magnification may be inadequate to reveal secondary pathologies or chronic fibrovascular changes.

Typically, the decision to purchase a videostroboscopy unit is driven by finances; one needs to treat enough patients who have voice disorders to justify the initial and maintenance costs of the equipment. One should consider, however, that with competition in the market growing at an alarming rate, many affordable, satisfactory units are available.

Aside from proper imaging equipment, one must be prepared to treat patients acutely, because there may be only hours before a performance or vocal commitment. Therefore, a stock of injectable steroids and other commonly used medications is essential. Maintaining a supply of over-the-counter remedies can help to postpone a trip to the pharmacy for the performer or production staff until a more convenient time is available.

**Evaluation and management of the acutely ill performer**

**Hours until show time**

The pressure of performance is transferred from the patient to the physician in these situations. A significant amount of time, money, and effort has been invested in preparation for the upcoming event, and the gears are in full motion. Accurate diagnosis and thoughtful management decision making is imperative. The otolaryngologist primarily should determine if a vocal fold hemorrhage, vocal fold tear, or other significant laryngeal injury has occurred to warrant cancellation of the performance. Therefore, visualizing the larynx in some way is imperative. In the absence of a show-stopping finding and after the most accurate possible diagnosis has been made, a frank discussion should occur between the patient and physician, involving the event/show management only at the patient’s discretion. This discussion should focus on whether the patient believes that he/she will be able to perform acceptably. If the patient feels that he/she simply cannot perform, then it is the physician’s
obligation to advocate for the patient. Most patients will want to perform, in which case supportive measures to facilitate vocal performance can be pursued.

Days until show time

The benefit of having several days to manage a vocal emergency is simply having the luxury of time. Patients can be seen in the office with optimum diagnostic equipment and the benefit of videostroboscopy. Precise diagnosis plus time for healing and therapy to take effect improve the odds of full performance at show time. The option of voice rest is opened, because many acute phonotraumatic events resolve spontaneously. If a vocal fold hemorrhage has occurred, serial observation for resolution can be performed, and show cancellation may be avoided. The luxury of time also enables the otolaryngologist to administer a larger range of medications. Antibiotics, steroids (if indicated), and supportive medications will have time to take effect. Oral steroids can be used in lieu of intramuscular injection, and voice therapy can be entertained. Working with a speech pathologist with singing expertise offers the benefit of optimizing techniques and repertoire to help set vocal limitations, prevent further phonotrauma, and optimize upcoming performances.

Weeks/months until show time

Extended time until performance allows for more involved, planned management of vocal emergencies. The short-, medium-, and long-term vocal goals can be considered and weighed into the decision-making process. The role of voice therapy to modify maladaptive vocal behaviors becomes more important, and working with a skilled speech pathologist or singing voice specialist should be encouraged. Disorders, such as LPR, allergic rhinitis, and chronic sinusitis, can be managed more effectively. Acute changes can be sorted out from chronic changes, allowing the performer to return to baseline before returning to intense voice use.

Adjunctive medical therapy: steroids and other medications

Corticosteroids

A variety of corticosteroids can be used to treat acute vocal fold edema arising from phonotraumatic laryngitis and acute infectious laryngitis. Judicious use of these medications can allow a vocal professional to perform successfully through a short period of vocal demand until a period of rest is available. Patients need to understand that steroids are a short-term solution, cannot be used frequently with hope for significant effects, and carry risks for significant side effects. Vocal performers who develop acute phonotraumatic laryngitis from voice abuse and misuse are most at risk for repeated corticosteroid abuse. Steroids give the false impression that there is
a quick fix for voice abuse and that the risk for chronically abusing the voice is small. Fortunately, most performers who have acute laryngeal edema are responsible individuals who have had the misfortune of acquiring a viral illness at an inopportune time. These patients are ideal candidates for acute use of steroids to facilitate performance. The authors’ choice for intramuscular corticosteroids in the acute setting is a mixture of dexamethasone, 5 mg (4 mg/mL = 1.25 mL) and methylprednisolone acetate (Depomedrol), 100 mg (80 mg/mL = 1.25 mL). The dexamethasone has onset of effect within an hour and lasts approximately 24 hours. Depomedrol begins to take effect within 24 hours and has effect for approximately 5 days. A short burst and taper of oral methylprednisolone is the authors’ choice for oral steroids. A corticosteroid dosing equivalency chart is given in Table 1.

Nonsteroidal anti-inflammatory drugs

Ibuprofen and other NSAIDs commonly are available over the counter and are taken frequently by ill performers to relieve sore throat and facial discomfort. Although the anti-inflammatory effect of these medications may be beneficial, the risk for vocal fold hemorrhage from their anticoagulative properties likely warrants the use of acetaminophen as an alternative.

Decongestants

Oral decongestants, such as pseudoephedrine, are common ingredients in over-the-counter cold remedies. These medications are effective in providing nasal decongestion; however, they come with a high price of significant vocal fold, oral, and pharyngeal dryness, all of which can affect vocal effort [13]. Short courses of topical nasal decongestants (eg, oxymetolazone and phenylephrine) have minimal systemic side effects and are effective; however, they carry the risk for rhinitis medicamentosa and should only be used for three to five consecutive days.

Antihistamines

Similar to oral decongestants, many cold remedies contain antihistamines. These medications are effective for sneezing and symptoms of allergic rhinitis, but also have a drying effect, although less severe than with oral decongestants. Patients should be counseled regarding these medications’ side effects. Nonsedating antihistamines (eg, loratadine) are more appropriate to use around performance times than are sedating antihistamines (eg, diphenhydramine).

Mucolytics

Mucolytics, such as guaifenesin, offer symptomatic relief by thinning secretions. Short- and long-acting formulations are available. Long-acting
<table>
<thead>
<tr>
<th>Agent</th>
<th>Equivalent glucocorticoid dose (mg)</th>
<th>Potency relative to hydrocortisone</th>
<th>Half-life</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Anti-inflammatory</td>
<td>Plasma (min)</td>
</tr>
<tr>
<td>Short acting</td>
<td></td>
<td>Mineral-corticoid</td>
<td>90</td>
</tr>
<tr>
<td>Hydrocortisone (Cortef, Cortisol)</td>
<td>20</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>Cortisone acetate</td>
<td>25</td>
<td>0.8</td>
<td>30</td>
</tr>
<tr>
<td>Intermediate acting</td>
<td></td>
<td></td>
<td>90</td>
</tr>
<tr>
<td>Prednisone</td>
<td>5</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>Prednisolone</td>
<td>5</td>
<td>4</td>
<td>200</td>
</tr>
<tr>
<td>Triamcinolone</td>
<td>4</td>
<td>5</td>
<td>300</td>
</tr>
<tr>
<td>Methylprednisolone</td>
<td>4</td>
<td>5</td>
<td>180</td>
</tr>
<tr>
<td>Long acting</td>
<td></td>
<td></td>
<td>200</td>
</tr>
<tr>
<td>Dexamethasone</td>
<td>0.75</td>
<td>30</td>
<td>300</td>
</tr>
<tr>
<td>Betamethasone</td>
<td>0.6</td>
<td>30</td>
<td>300</td>
</tr>
</tbody>
</table>

Commonly prescribed replacement steroid equivalents: prednisone, 5 mg = cortisone, 25 mg = dexamethasone, 0.75 mg = hydrocortisone (Cortef), 20 mg.

Mucinex (guaifenesin), 1200 mg twice daily, is helpful for relieving the sensation of excess mucus.

Other medications

Inhaled steroids are to be avoided in acute laryngitis because of the known risk for dysphonia and fungal superinfection associated with these medications [14]. Many performing artists report an improved sense of well-being with a vitamin B₁₂ injection intramuscularly when they are ill. The efficacy of this is unknown. Patients should be counseled that herbal remedies are not without risk and should be taken judiciously. Many vitamins and herbs can have drying or anticoagulant properties. Likewise, innumerable throat sprays and lozenges are available whose efficacy have not been proven. In general, the authors recommend that performers avoid any spray, lozenge, or liquid that gives a numb or tingling feeling in the throat (eg, menthol- or benzocaine-containing preparations).

Humidification and hydration

The benefits of humidification and hydration cannot be overstated. Articulation and vocal fold oscillation are affected significantly by dry environments. Oral hydration and steam inhalation can help to fight the effects of dryness in the laryngopharynx.

When to cancel a show

"The importance of the singer’s voice in his long-term career plans, the importance of the upcoming performance, and the consequences of canceling the concert must be seriously considered. In the frequent borderline conditions, the condition of the larynx must be weighed against other factors affecting the singer as an artist."

R.T. Sataloff, 1991 [15,16]

Making the recommendation for a professional singer or speaker not to perform can be an extremely difficult decision. Pressure for these individuals to perform can be extreme. The cost of canceling an event extends beyond the large financial cost to the patient, crew, and venue. Artists and orators are loyal to their fan base and do not want to disappoint. Despite these pressures, it must be kept in mind that the treating physician is advocating for the patient’s well-being now and in the future. Absolute indications for non-performance are acute vocal fold hemorrhage and acute vocal fold tear. Despite the desires of the patient, recommendation should be absolute voice rest in these situations to avoid the potential of vocal fold scarring. Outside of these situations, the decision to cancel a show is a judgment call between physician and patient. The physician must decide whether the severity of the
laryngeal findings puts the patient at risk for scarring or hemorrhage while “singing sick.” Fortunately, these circumstances arise infrequently. Additionally, the patient must decide if he/she feels able to perform acceptably well. If the patient wishes to perform, full discussion of the potential adverse consequences of the decision (eg, permanent vocal fold scarring) has to occur with the artist. If the patient does not feel that he/she is physically capable of performing, it is the physician’s obligation to advocate for the patient and recommend nonperformance. The decision to recommend nonperformance is rare; in a review of 40 singers with acute illness before show...
time, cancellation of performance was necessary in only two cases [4]. A simple algorithm for management is outlined in Fig. 4.

Summary

Acute management of vocal emergencies can be a difficult and stressful element of this specialty. A thoughtful history, coupled with appropriate diagnostic instrumentation, is the cornerstone of evaluating a patient with a vocal emergency. Understanding the various causes of acute dysphonia in the performing artist, as well as awareness of the additional pressures placed upon performing artists, empowers the otolaryngologist to help patients in this specialty.

References